

EXHIBIT 1

FULLY REDACTED

EXHIBIT 2

3/30/2007 Pre Trial Conference Hearing Transcript

1 IN THE UNITED STATES DISTRICT COURT
2 IN AND FOR THE DISTRICT OF DELAWARE

3 - - -

4 TELCORDIA TECHNOLOGIES, INC., : Civil Action
5 :
6 Plaintiff/Counterclaim :
7 Defendant, :
8 :
9 v. :
10 :
11 LUCENT TECHNOLOGIES INC., :
12 :
13 Defendant/Counterclaim :
14 Plaintiff. : No. 04-875-GMS

15 - - -

16 TELCORDIA TECHNOLOGIES, INC., : Civil Action
17 :
18 Plaintiff/Counterclaim :
19 Defendant, :
20 :
21 v. :
22 :
23 CISCO SYSTEMS, INC., :
24 :
25 Defendant/Counterclaim :
Plaintiff. : No. 04-876-GMS

26 - - -

27 Wilmington, Delaware
28 Friday, March 30, 2007
29 10:00 a.m.
30 CONFERENCE

31 - - -

32 BEFORE: HONORABLE GREGORY M. SLEET, U.S.D.C.J.
33
34
35

3/30/2007 Pre Trial Conference Hearing Transcript

1 fact that Cisco makes 20 billion dollars a year.

2 THE COURT: The questions of intervening rights
3 and laches, are there underlying factual disputes that are
4 going to have to be resolved by the jury with regard -- I
5 think those are questions for the Court ultimately.

6 MR. WILLIAMSON: Well, that raises another
7 issue, I guess, Your Honor, that the parties seem to be in
8 agreement -- I don't want to mischaracterize anything -- but
9 the parties seem to be in agreement that the jury should
10 hear these issues.

11 MR. DUNNER: Your Honor, may I speak briefly?

12 THE COURT: Yes.

13 MR. DUNNER: The parties discussed with one
14 another, as we were preparing the pretrial order, whether we
15 would agree, subject to your approval, that all the issues,
16 including typically equitable issues, would be decided not
17 as an advisory matter but as a final matter.

18 THE COURT: I misperceived. I thought you had
19 agreed that the issue of inequitable conduct --

20 MR. DUNNER: All of the equitable issues, Your
21 Honor.

22 THE COURT: All of the equitable issues.

23 MR. DUNNER: Counsel can correct me. That is
24 the agreement.

25 THE COURT: I don't know if I am prepared to

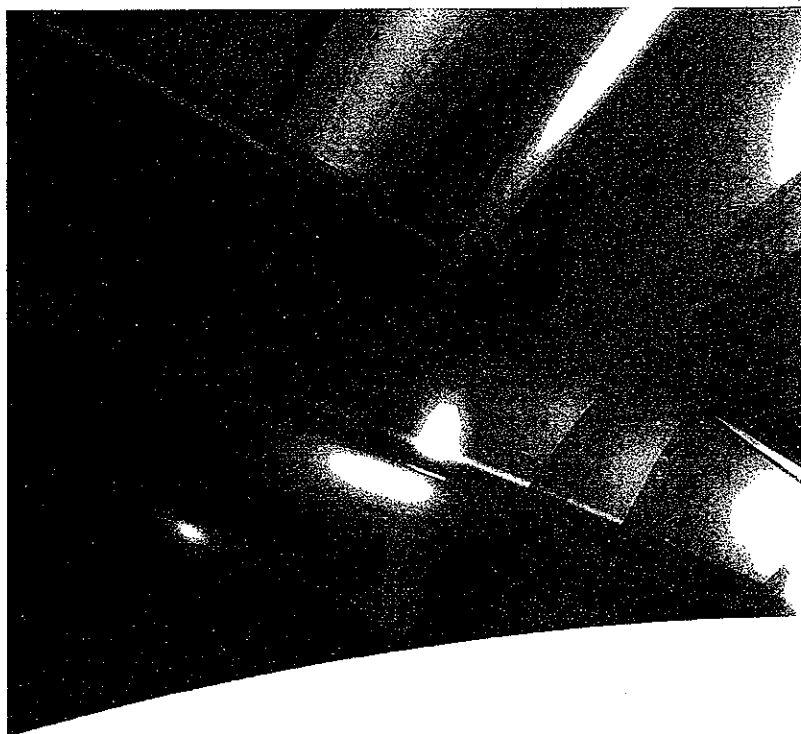
EXHIBIT 3

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EXHIBIT 4

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EXHIBIT 5



SAIC 2003 Annual Report

*SAIC employees are
dedicated to delivering
best-value services and
solutions by innovative
applications of science
and technology.*



Our Performance in Fiscal Year 2003

Despite a difficult commercial business environment, our revenues from continuing operations grew 2% to \$5.9 billion. Revenue from our regulated segment, primarily from federal government customers, increased by 12%. We saw even more dramatic growth in our business for certain key customers – such as the U.S. Air Force, DARPA, NASA, the Customs Service, and the Departments of Justice, Transportation, and Education. The growth in government business helped offset revenue declines from our commercial telecommunications and energy IT outsourcing customers as those markets continued under pressure, particularly telecommunications.

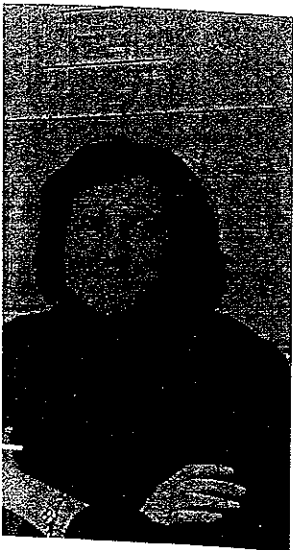
Our segment operating income – which generally represents the income from our operating groups and is a good measure of how we're performing as a company – was \$507 million, an increase of 18%. These profits were generated by good contract performance, and by cost reductions and increased efficiencies. This trend was

best reflected at our telecommunications subsidiary, Telcordia Technologies, which maintained good profitability even as its revenues declined 25%.

Those revenue and segment operating income numbers exclude the performance of INTESA, our joint venture company in Venezuela. Because of the political and economic situation in Venezuela, INTESA suspended its operations in December 2002, and those operations are not expected to resume. Consequently, INTESA has been classified as a discontinued operation in our financial statements.

Net income for FY2003 was \$246 million, up from \$19 million in FY2002. This large increase was driven by improved operating performance, as well as by significantly reduced net losses on marketable securities and other investments.

As we head into FY2004, SAIC's balance sheet and liquidity position remain strong. Even after significant stock repurchases, we ended FY2003 with about \$2.2 billion in cash, cash equivalents,



FORTUNE names SAIC #2 Most Admired Company in Computer & Data Services Industry

"...despite the corporate governance scandals that have done so much to tarnish the reputation of business, there are companies to admire. And when times are not so good, it is a good time to celebrate those that get it right."

FORTUNE magazine, February 25, 2003

4

and short-term investments in marketable securities. Major sources of cash during FY2003 were cash generated by our operations, proceeds from liquidation of our remaining investments in VeriSign and Amdocs, and funds received from our \$800-million bond placement. Our strong balance sheet gives us great flexibility to grow our business.

Going forward, we remain cautious about near-term recovery in our commercial markets. We are optimistic about our opportunities to be of service to our government customers and about our long-term outlook overall.

Employee Ownership

In business, the choice of strategy at the beginning often lays the foundation for future success. At SAIC, our strategy of employee ownership laid the foundation for much of our success. The same reasons we chose employee ownership at the beginning hold true today. It motivates our employees to perform higher quality work for our customers and creates a more stable company.

We should never underestimate the impact that each of us, as employee owners, can have on the success and well-being of our employee teammates and SAIC as a whole.

As a private company owned by its highly skilled current and former employees, SAIC has

the luxury of being able to concentrate on long-term goals and doing what it does best – helping customers solve complex technical problems of national and international importance.

Looking to the Future

In early FY2004, I presented to our Board of Directors a plan for the smooth and orderly transition of the CEO and Chairman of the Board positions. The plan provides for both an orderly transition and continuity and stability through my ongoing role as CEO and Chairman of the Board. I will serve as CEO through the earlier of February 1, 2004 or when my successor has been elected by the SAIC Board of Directors. My current term on the Board expires in July 2004, and I will remain Chairman until a new Chairman is selected by the Board. I believe this plan is in the best interests for our long-term success.

We all know SAIC has been making important contributions for 34 years. I am confident that the company's future will be as bright as its past.



J.R. Beyster, Chairman of the Board, President, and Chief Executive Officer

Revenues and Segment Operating Income exclude activity from our discontinued INTESA operation.

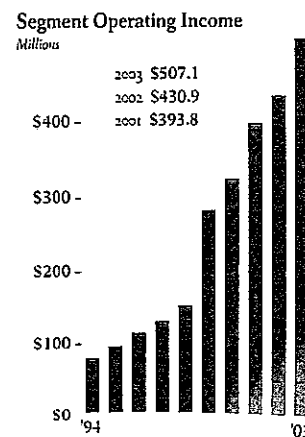
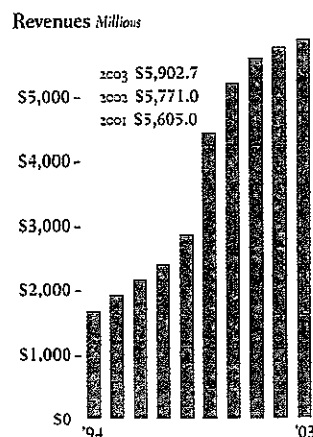


EXHIBIT 6

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EXHIBIT 7



Who Makes What: OSS

Introduction

DECEMBER 21, 2006

It's been two years since *Light Reading* last published a "Who Makes What" report for the telecom software sector, during which time the OSS and BSS (operations support systems and business support systems) market has undergone massive upheaval. (See [Who Makes What: OSS Update](#).)

Mergers and acquisitions have come thick and fast, largely as a result of telecom operators consolidating networks and back office systems as part of their move towards next-generation networks. This has been magnified by consolidation in the service provider market, operator efforts to reduce their line-ups of software suppliers, and the financial position of many of the OSS/BSS players.

More details on these developments are given on [page 2](#).

The object of this report is to identify those companies still active in developing and delivering OSS to carriers and to the systems integrators that help the operators deploy such systems. We've tried to keep it as simple as possible by limiting the number of categories to 15, as listed below.

Why we're doing it

The resulting taxonomy will provide a useful, up-to-date resource for everyone in the industry. For OSS companies it will show them who is (and isn't!) competing with them. For integrators and carriers it'll help identify the players in this important market, and drill down into who does what.

In addition, the company names listed in this taxonomy will provide the foundation for an upcoming market survey of service providers' perceptions of players in some of the hottest OSS market segments, to be published as a [Light Reading Insider](#) report.

How we're doing it, with your help

Each of the following pages contains a brief description of an OSS category and then a list of companies active in that sector. This is where you can help. If your company is a supplier in this market, please take the time to check that you're comfortable with the way we're defining the market and make sure you're listed in all of the appropriate places. You can also suggest other company names that should be included or disregarded.

If you want to propose changes, use the message board linked to the article or email us at editors@lightreading.com and include "Who Makes What: OSS" and your company name in the subject field.

Here's the hyperlinked list of our OSS categories:

- [Billing Systems \(Retail\)](#)
- [Interconnect Billing Systems](#)
- [Revenue Assurance & Fraud Management](#)
- [Mediation Systems](#)
- [Customer Relationship Management \(CRM\)](#)

- Multivendor Element Management Systems
- Middleware
- Resource/Inventory Management
- Data Integrity
- Service Assurance – Fault Management
- Service Assurance – Performance Monitoring
- Service Assurance – Service Management
- Service Assurance – Test & Measurement
- Service Fulfillment – Activation
- Service Fulfillment – Provisioning

— Ray Le Maistre is *Light Reading's* International Editor. His beats also include telecom software.

Next Page: The Big Picture

The Big Picture

In late 2004, when *Light Reading* published its previous "Who Makes What" on the OSS market, consolidation was already a major issue. At that time, a lot of companies that had raised money during the bubble period were coming to the end of their cash reserves, while some of the bigger and/or more successful players were beefing up their capabilities as the market improved, if only slightly.

Around that time, the acquisitions with the greatest impact were the purchase of inventory management specialist Granite Systems by Telcordia Technologies Inc. for around \$70 million (May 2004), and the purchase of ADC Telecommunications Inc. (Nasdaq: ADCT - message board) business unit Metrica for about \$40 million by wireless performance monitoring specialist WatchMark-Comnitel, which then renamed itself Vallent Corp. . (See Telcordia Shells Out at Last and ADC Sells Metrica to OSS Rival.)

A lot has happened since then, not least to those two companies. Telcordia was acquired for \$1.35 billion in March 2005 by a pair of private equity firms, and is currently believed to have a virtual "For Sale" sign erected next to its corporate Christmas tree that has attracted the attention of IT giant SAP AG (NYSE/Frankfurt: SAP - message board). (See HQ Sale Funds Telcordia Deal and Telcordia Up for Grabs Again?)

Vallent, meanwhile, is the latest OSS firm to accept a takeover offer from another IT giant, IBM Corp. (NYSE: IBM - message board), in a deal believed to be worth around \$200 million. (See IBM Buys Another OSS Firm and IBM Buys Vallent.)

Hot Stuff

These two examples highlight the continuing hot trend of M&A activity in the OSS sector, and, in Telcordia's case, show that a broad portfolio with a highly rated inventory management system at its core is business with value.

Here are some of the other main acquisitions from the past two years that have shaped the OSS market we have today:

- [Oracle Buys More OSS With MetaSolv](#)
- [Comverse Acquires Netonomy](#)
- [Wipro Sweeps Across Europe](#)
- [Argent Buys Fellow OSS Firm](#)
- [Subex, Azure Merge](#)
- [Oracle Acquires Portal](#)
- [CSG Acquires Telution](#)
- [Cramer Gets T-Soft, Nixes IPO](#)
- [Actix Buys Radioplan](#)
- [MDS Acquires Visual Wireless](#)
- [CA Makes Wily Acquisition](#)
- [AsialInfo Acquires OSS Vendor](#)
- [IBM Tiptoes to Telecom With Micromuse](#)
- [FTS Buys Viziqor](#)
- [Convergence Drives Billing M&A](#)
- [Comptel Enhances Its OSS](#)
- [Syndesis Acquires CoManage](#)
- [MIND CTI Buys Sentori](#)
- [Martin Dawes Buys Lavastorm](#)
- [Amdocs Buys Into Cable](#)
- [Ericsson Buys Mobile Data OSS Firm](#)
- [Ensim Buys Telegea](#)
- [Ericsson Acquires Teleca OSS](#)
- [Micromuse Acquires Quallaby](#)
- [Concord to Buy Aprisma for \\$93M](#)
- [Syndesis Makes Its M&A Move](#)
- [EMC 'Paying Too Much' for Smarts](#)
- [OSS Firms in M&A Frenzy](#)

In Telcordia's case, the Granite acquisition bolstered its technology and customer base, giving it a new-generation inventory product and some of the European accounts it had long craved. But it had competition, as Telcordia had to beat off billing giant [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#)) to land its prey. (See [Telcordia Nearly Blew Granite Deal.](#))

So, even as long ago as early 2004, Amdocs was looking to expand its capabilities into the network management and service fulfillment space. Having lost out on that particular deal, it turned its attention to Granite's leading rival, [Cramer Systems Ltd.](#), and eventually stumped up a whopping \$375 million for the inventory specialist. (See [Amdocs Snaps Up Cramer](#) and [VCs Cash In on Cramer.](#))

And by the time Amdocs acquired Cramer in July 2006, the British firm was already developing enhanced service fulfillment capabilities, allowing Amdocs to tick a number of boxes to add to its existing billing and CRM strongholds. (See [Amdocs Unveils New OSS](#), [Cramer Premieres Suite](#), and [OSS Firms Jump on IMS.](#))

Amdocs has also taken that acquisition strategy a step further, buying its way into the content delivery market, as well as bolstering its billing position in the cable sector and getting into China – giving itself an even more rounded offering for service providers. (See [Amdocs Buys Into Content Delivery](#), [Amdocs Buys Into Cable](#), and [Amdocs Buys Chinese Firm.](#))

Which brings us to the other major OSS trend.

One-Stop Shops and Buzzwords

The reason Amdocs wanted to spread its wings is that the world's major carriers are undergoing a massive network and back office transformation that is made simpler if they deal with as few suppliers as possible.

Whether it's hardware, software, or services, carriers want to deal with companies that can deliver a lot of

what they need with the minimum of fuss and integration. Basically, if you want a piece of the big dollar action, then being big and having multiple assets that suit an NGN environment is going to help win business, now more than ever before.

Two examples of this are BT Group plc (NYSE: BT - [message board](#); London: BTA), which has a core set of hardware and software suppliers that are then supplemented mostly through the partners of those preferred suppliers, and Telstra Corp. (Pink Sheets: TLSYY - [message board](#)). (See Telstra Outlines Massive OSS Project, BT Awards Monster OSS Deal, Siemens Unveils 21CN Partners, Ericsson to Bring Partners to 21CN Party, and OSSs Need Convergence, Too.)

There are plenty of other examples of course -- AT&T Inc. (NYSE: I - [message board](#)) has been at it for years. (See AT&T Needs New 'Underware,' Says CEO.)

As a result, the OSS market is converging, with a group of heavy hitters emerging as the key players. Amdocs is one, while IBM Corp. (NYSE: IBM - [message board](#)), Hewlett-Packard Co. (NYSE: HPQ - [message board](#)), Oracle Corp. (Nasdaq: ORCL - [message board](#)), and Telcordia are the others, though there are some with broader product and service support capabilities with the muscle to influence decisions. (See LSI Annexes StoreAge.)

And what's important for these and other contenders is to not just have a menu of OSS products and services, but to show they can fit easily into the IMS (IP Multimedia Subsystem) and SDP (Service Delivery Platform) strategies of the major operators too. IMS and SDP are two of the key buzzwords that any major OSS player can't afford to leave out of their marketing presentations. (See IMS, SDP Revolutionize OSS.)

That doesn't mean there aren't still hundreds of players in the OSS market, because there are. But slowly the number is whittling down, and for those that lack the resources and relationships to find their own way to the carriers' CTO and CIO offices, forming partnerships with the major equipment, software, and integration players is vital for survival.

So who are all these companies, and what do they do? The remainder of this report addresses these questions.

Next Page: Billing Systems (Retail)

Billing Systems (Retail)

Billing is, of course, the process responsible for the production of timely and accurate bills. But billing systems also process customer payments and collections, handle customer inquiries about bills, resolve billing problems, provide information about billing status, and support pre- and post-pay services. This category includes companies that develop and supply retail billing systems, and the rating systems that enable service providers to set up tariffing rules and policies.

- Ace-Comm Corp. (ACE*COMM)
- Allround
- Amdocs Ltd. (NYSE: DOX - [message board](#))
- AsialInfo Holdings Inc.
- Billing Services Group Ltd. (LSE: BILL - [message board](#)) (formerly Billing Concepts Inc.)
- Boston Communications Group Inc. (Nasdaq: BCGI - [message board](#)) (BCGI)
- Caleo Technologies AB
- CBoss Corp.
- Cerillion Technologies Ltd.
- Comarch SA
- CGI Group Inc. (NYSE: GIB - [message board](#); Toronto: GIB.A)
- Convergys Corp. (NYSE: CVG - [message board](#))
- CPqD Telecom & IT Solutions
- Crestel
- CSG Systems International Inc. (Nasdaq: CSGS - [message board](#))

- CTI Group
- DCA Services Inc.
- Ergon Informatik AG
- Ericsson AB (Nasdaq: ERIC - message board)
- Eskadenia Software Solutions
- FTS (London: FTS - message board) (formerly Formula Telecom Solutions)
- Highdeal Inc.
- Intec Telecom Systems plc (London: ITL - message board)
- IntraISP
- LHS Group
- Martin Dawes Systems (MDS)
- MaxBill
- Mer Telemanagement Solutions Ltd. (Nasdaq: MTSL - message board)
- MetraTech Corp.
- Mind CTI Ltd. (Nasdaq: MNDO - message board)
- MoreMagic Software
- Nexus Telecom AG
- Nimbus Systems SL
- Openet Telecom Inc.
- Oracle Corp. (Nasdaq: ORCL - message board)
- Orga Systems GmbH
- Primal Solutions Inc.
- Redknee Inc.
- Rodopi Software Inc.
- Ryder Systems
- SigValue Technologies
- Strom telecom
- Suntech Sp. z.o.o.
- Tango Telecom
- Telcordia Technologies Inc.
- TeleBilling A/S
- TeleSphere Software Inc.
- Usha Communications Technology Inc.
- VoluBill

Next Page: **Interconnect Billing Systems**

Interconnect Billing Systems

These are billing systems used for local, regional, national, and international inter-carrier payments, and are very different from the retail billing systems used by carriers for their end-user customers. They are very often referred to as "settlement systems."

- Allround
- AsiaInfo Holdings Inc.
- BassetLabs
- BPL Telecom
- CBoss Corp.
- Cerillion Technologies Ltd.
- Comarch SA
- i-conX

- [Intec Telecom Systems plc](#) (London: [ITL](#) - [message board](#))
- [Nexus Telecom AG](#)
- [Strom telecom](#)
- [Subex Azure Ltd.](#)
- [Telarix Inc.](#)
- [TeleSphere Software Inc.](#)
- [Wedo Consulting](#)

Next Page: [**Revenue Assurance & Fraud Management**](#)

Revenue Assurance & Fraud Management

These systems verify correct billing, or detect and identify the unauthorized use of service provider network assets. Some software products can assess subscriber activities and identify unusual patterns in the same way as credit card companies assess cardholder spending patterns.

- [Ace-Comm Corp.](#) (ACE*COMM)
- [Agilent Technologies Inc.](#) (NYSE: [A](#) - [message board](#))
- [Alcatel-Lucent](#) (NYSE: [ALU](#) - [message board](#))
- [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#))
- [Araxxe](#)
- [BassetLabs](#)
- [Bridgewater Systems Corp.](#)
- [Brighterion Inc.](#)
- [CAPE Technologies Ltd.](#)
- [CBoss Corp.](#)
- [Connectiva Systems](#)
- [CPqD Telecom & IT Solutions](#)
- [CSG Systems International Inc.](#) (Nasdaq: [CSGS](#) - [message board](#)) (Telution)
- [cVidya Networks Inc.](#)
- [ECTel Ltd.](#) (Nasdaq: [ECTX](#) - [message board](#))
- [Equinox Information Systems](#)
- [Ergon Informatik AG](#)
- [Ericsson AB](#) (Nasdaq: [ERIC](#) - [message board](#))
- [FML Solutions](#)
- [Hewlett-Packard Co.](#) (NYSE: [HPQ](#) - [message board](#))
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#))
- [Intec Telecom Systems plc](#) (London: [ITL](#) - [message board](#))
- [Lightbridge Inc.](#)
- [Neural Technologies](#)
- [Nexus Telecom AG](#)
- [Pivotal Ltd.](#)
- [Primal Solutions Inc.](#)
- [Subex Azure Ltd.](#)
- [Syniverse Technologies Inc.](#)
- [Tech Mahindra](#)
- [Telarix Inc.](#)
- [Telesciences Inc.](#)
- [TTI Telecom International Ltd.](#) (Nasdaq: [TTIL](#) - [message board](#))
- [Usha Communications Technology Inc.](#)
- [VeriSign Inc.](#) (Nasdaq: [VRSN](#) - [message board](#))

- [Verso Technologies Inc.](#) (Nasdaq: [VRSO](#) - [message board](#))
- [Visual Analytics Inc.](#)
- [Wedo Consulting](#)

Next Page: [**Mediation Systems**](#)

Mediation Systems

Mediation products are basically high-level transaction processing systems. They assemble information from various network elements into specific records, which are then fed into other OSS systems -- most notably billing systems and network event management systems. Mediation systems are fundamental to the success of billing systems and they are often supplied in tandem.

- [Ace-Comm Corp.](#) (ACE*COMM)
- [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#))
- [Bridgewater Systems Corp.](#)
- [CBoss Corp.](#)
- [Cerillion Technologies Ltd.](#)
- [Clarity International Pty Ltd.](#)
- [Comptel Corp.](#) (Helsinki: [CLT1V](#) - [message board](#))
- [CPqD Telecom & IT Solutions](#)
- [DigitalRoute AB](#)
- [ECTel Ltd.](#) (Nasdaq: [ECTX](#) - [message board](#))
- [Ericsson AB](#) (Nasdaq: [ERIC](#) - [message board](#))
- [Evolving Systems Inc.](#) (Nasdaq: [EVOL](#) - [message board](#))
- [FTS](#) (London: [FTS](#) - [message board](#)) (formerly Formula Telecom Solutions)
- [Hewlett-Packard Co.](#) (NYSE: [HPQ](#) - [message board](#))
- [Highdeal Inc.](#)
- [Intec Telecom Systems plc](#) (London: [ITL](#) - [message board](#))
- [Integration Management Pty Ltd.](#) (no Website found)
- [Kabira Technologies Inc.](#)
- [LHS Group](#)
- [Mind CTI Ltd.](#) (Nasdaq: [MNDO](#) - [message board](#))
- [Oracle Corp.](#) (Nasdaq: [ORCL](#) - [message board](#)) (MetaSolv)
- [Narus Inc.](#)
- [Nexus Telecom AG](#)
- [Nokia Corp.](#) (NYSE: [NOK](#) - [message board](#))
- [Openet Telecom Inc.](#)
- [Primal Solutions Inc.](#)
- [Prime Carrier Ltd.](#)
- [Telcordia Technologies Inc.](#)
- [TeleSphere Software Inc.](#)
- [TTI Telecom International Ltd.](#) (Nasdaq: [TTIL](#) - [message board](#))
- [Usha Communications Technology Inc.](#)

Next Page: [**Customer Relationship Management \(CRM\)**](#)

Customer Relationship Management (CRM)

Formerly known as "customer care," CRM includes all the functions involved in acquiring and retaining customers, making it quite a broad church. CRM can cover a vast array of processes within a service

provider (anything involving customer service and support, extending even into service assurance and marketing), with the central theme the management of the customer relationship.

- [Agillic](#)
- [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#))
- [Argent Software Inc.](#)
- [AsiaInfo Holdings Inc.](#)
- [BMC Software Inc.](#) (NYSE: [BMC](#) - [message board](#)) (Remedy)
- [CBoss Corp.](#)
- [CGI Group Inc.](#) (NYSE: [GIB](#) - [message board](#); Toronto: GIB.A)
- [Chordiant Software Inc.](#)
- [Converse Inc.](#)
- [Convergys Corp.](#) (NYSE: [CVG](#) - [message board](#))
- [CSG Systems International Inc.](#) (Nasdaq: [CSGS](#) - [message board](#))
- [DCA Services Inc.](#)
- [Eskadenia Software Solutions](#)
- [FTS](#) (London: [FTS](#) - [message board](#)) (formerly Formula Telecom Solutions)
- [Infor](#)
- [Intec Telecom Systems plc](#) (London: [ITL](#) - [message board](#))
- [IntraISP](#)
- [Lightbridge Inc.](#)
- [MaxBill](#)
- [Mer Telemanagement Solutions Ltd.](#) (Nasdaq: [MTSL](#) - [message board](#))
- [Microsoft Corp.](#) (Nasdaq: [MSFT](#) - [message board](#))
- [Mind CTI Ltd.](#) (Nasdaq: [MNDO](#) - [message board](#))
- [Oracle Corp.](#) (Nasdaq: [ORCL](#) - [message board](#))
- [FTS](#) (London: [FTS](#) - [message board](#))
- [Rodopi Software Inc.](#)
- [SAP AG](#) (NYSE/Frankfurt: [SAP](#) - [message board](#))
- [Strom telecom](#)
- [Suntech Sp. z.o.o.](#)
- [SupportSoft Inc.](#)
- [TeleSphere Software Inc.](#)
- [Usha Communications Technology Inc.](#)

Next Page: [**Multivendor Element Management Systems**](#)

Multivendor Element Management Systems

When vendors provide equipment to service providers, they must provide some means of remotely managing that equipment once it is installed. At a minimum, equipment alarms need to be collected and cards need to be configured, so virtually every device in a public network today will intelligently communicate with what is usually a vendor-supplied UNIX-based or PC-based system. A service provider will refer to this as the vendor's element management system (EMS).

Depending on the vendor's choice, the EMS will communicate to a service provider's network-wide "network manager" employing various protocols and interface standards.

So each hardware manufacturer will have its own EMSs for its products, but we're not going to include all hardware vendors in this taxonomy. Instead, we're interested in vendors with off-the-shelf multivendor EMS software that replaces multiple EMSs, so reducing the number of software systems a carrier needs to use.

- [AdventNet Inc.](#)

- [Agilent Technologies Inc.](#) (NYSE: [A](#) - [message board](#))
- [Alcatel-Lucent](#) (NYSE: [ALU](#) - [message board](#))
- [SYS Technologies](#)
- [Cisco Systems Inc.](#) (Nasdaq: [CSCO](#) - [message board](#))
- [Dorado Software Inc.](#)
- [Ericsson AB](#) (Nasdaq: [ERIC](#) - [message board](#))
- [Fluke Networks](#) (Visual Networks)
- [FTS](#) (London: [FTS](#) - [message board](#)) (formerly Formula Telecom Solutions)
- [Hewlett-Packard Co.](#) (NYSE: [HPQ](#) - [message board](#))
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#)) (Micromuse)
- [Intelliden Corp.](#)
- [Mycom International Inc.](#)
- [Nakina Systems Inc.](#)
- [Nokia Corp.](#) (NYSE: [NOK](#) - [message board](#))
- [ZZnode Corp.](#)

Next Page: **Middleware**

Middleware

These systems are not specific to the telecom market but play an important role in managing complex OSS processes. Essential systems such as databases, messaging software, and systems management software need to be managed within a carrier's OSS environment. The software that performs this central management role, and which also manages the security of the network, is generically referred to as middleware.

- [AdventNet Inc.](#)
- [Prime Carrier Ltd.](#)
- [BEA Systems Inc.](#) (Nasdaq: [BEAS](#) - [message board](#))
- [Borland Software Corp.](#)
- [ConceptWave Software Inc.](#)
- [Dorado Software Inc.](#)
- [Novell Inc.](#) (Nasdaq: [NOVL](#) - [message board](#))
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#))
- [Ilog Inc.](#)
- [Iona Technologies](#) (Nasdaq: [IONA](#) - [message board](#))
- [IntralSP](#)
- [Microsoft Corp.](#) (Nasdaq: [MSFT](#) - [message board](#))
- [Nakina Systems Inc.](#)
- [netForensics Inc.](#)
- [PrismTech Corp.](#)
- [Solid Information Technology Ltd.](#)
- [Sun Microsystems Inc.](#) (Nasdaq: [SUNW](#) - [message board](#))
- [Tibco Software Inc.](#) (Nasdaq: [TIBX](#) - [message board](#))
- [Vertel Corp.](#) (Nasdaq: [VRTL](#) - [message board](#))
- [Vitria Technology Inc.](#) (Nasdaq: [VITR](#) - [message board](#))
- [webMethods Inc.](#)

Next Page: **Resource/Inventory Management**

Resource/Inventory Management

Resource management systems are still often known as inventory management systems, though this tends to suggest the management of a database of physical network elements. Resource management systems can track physical inventory *and* "logical" inventory (though not all perform both functions). By relating equipment deployment to the services being delivered by that equipment, a system can determine the network capacity being deployed and track network usage and available capacity.

- [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#))
- [Arkipelago](#)
- [Axiom Systems Inc.](#)
- [CBoss Corp.](#)
- [Cisco Systems Inc.](#) (Nasdaq: [CSCO](#) - [message board](#))
- [Clarity International Pty Ltd.](#)
- [Comptel Corp.](#) (Helsinki: [CLT1V](#) - [message board](#)) (Incatel)
- [Digital Fairway Corp.](#)
- [Enghouse Systems Ltd.](#)
- [FTS](#) (London: [FTS](#) - [message board](#)) (formerly Formula Telecom Solutions)
- [GE Energy \(Smallworld\)](#)
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#)) (Micromuse)
- [IntraISP](#)
- [Nakina Systems Inc.](#)
- [NetCracker Technology Corp.](#)
- [NTG Clarity Networks Inc.](#)
- [Oracle Corp.](#) (Nasdaq: [ORCL](#) - [message board](#)) (MetaSolv)
- [S2Net](#) (Open Telecommunications)
- [SaskTel International](#)
- [Syndesis Ltd.](#)
- [Telcordia Technologies Inc.](#)
- [TTI Telecom International Ltd.](#) (Nasdaq: [TTIL](#) - [message board](#))
- [Visionael Corp.](#)
- [VPIsystems Inc.](#)
- [Wisor Telecom](#)
- [ZZnode Corp.](#)

Next Page: [Data Integrity](#)

Data Integrity

"Dirty data" is a big problem for operators, and is the main cause of provisioning failures and frustration for network engineers. Data integrity solutions perform network discovery and reconciliation functions, updating the information held about network systems, and making that information available to other back office applications. They are often supplied with network inventory management products, with which they are closely aligned.

- [Amdocs Ltd.](#) (NYSE: [DOX](#) - [message board](#)) (Cramer Systems)
- [CBoss Corp.](#)
- [Celona Technologies Ltd.](#)
- [cVidya Networks Inc.](#)
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#))
- [Nakina Systems Inc.](#)
- [NetCracker Technology Corp.](#)
- [Netsure Telecom](#)

- [NTG Clarity Networks Inc.](#)
- [S2Net](#)
- [Syndesis Ltd.](#)
- [Tech Mahindra](#)
- [Telcordia Technologies Inc.](#)
- [Wedo Consulting](#)

Next Page: **Service Assurance – Fault Management**

Service Assurance – Fault Management

These systems collect and present alarms and events by interrogating network equipment and/or element management systems; and many allow staff to log in to specific network elements to check for additional information that might be relevant to the alarm. While there are some pure fault management systems, they often perform other tasks, such as performance monitoring (for which there is a separate category).

- [Agilent Technologies Inc.](#) (NYSE: [A](#) - [message board](#))
- [Avisto S.A.](#)
- [CBoss Corp.](#)
- [Cisco Systems Inc.](#) (Nasdaq: [CSCO](#) - [message board](#))
- [Clarity International Pty Ltd.](#)
- [Comarch SA](#)
- [Computer Associates](#)
- [EMC Smarts](#)
- [FTS](#) (London: [FTS](#) - [message board](#)) (formerly Formula Telecom Solutions)
- [GE Energy \(Smallworld\)](#)
- [Harris Corp.](#) (NYSE: [HRS](#) - [message board](#))
- [Hewlett-Packard Co.](#) (NYSE: [HPQ](#) - [message board](#))
- [IBM Corp.](#) (NYSE: [IBM](#) - [message board](#)) (Micromuse)
- [IBM Tivoli](#)
- [Ilog Inc.](#)
- [Intracom Telecom](#)
- [MegaSys Computer Technologies](#)
- [Mycom International Inc.](#)
- [Nokia Corp.](#) (NYSE: [NOK](#) - [message board](#))
- [NTG Clarity Networks Inc.](#)
- [Pivotal Ltd.](#)
- [Rocket Software Inc.](#)
- [SaskTel International](#)
- [Spirent Communications plc](#) (NYSE: [SPM](#) - [message board](#); London: [SPT](#))
- [Tektronix Inc.](#) (NYSE: [TEK](#) - [message board](#))
- [Telcordia Technologies Inc.](#)
- [TTI Telecom International Ltd.](#) (Nasdaq: [TTIL](#) - [message board](#))
- [ZZnode Corp.](#)

Next Page: **Service Assurance – Performance Monitoring**

Service Assurance – Performance Monitoring

These systems measure and monitor particular technologies, applications, or functions of networks. For instance, in an IP network they might monitor latency and packet loss. There are systems designed

specifically to monitor voice performance, and others for frame relay, ATM, and so on. There are also systems specific to wireless networks, as they are optimized to monitor, for example, the quality of the air interface or the transmission path between base stations and the backbone network.

- Actix Ltd.
- Agilent Technologies Inc. (NYSE: A - message board)
- Alcatel-Lucent (NYSE: ALU - message board)
- Aircom International Ltd.
- Computer Associates
- Brix Networks Inc.
- CBoss Corp.
- Clarity International Pty Ltd.
- Comarch SA
- EMC Smarts
- Fluke Networks
- FTS (London: FTS - message board) (formerly Formula Telecom Solutions)
- Hewlett-Packard Co. (NYSE: HPQ - message board)
- IBM Corp. (NYSE: IBM - message board) (Micromuse)
- Ilog Inc.
- InfoVista SA (Nasdaq: IVTA - message board)
- ipanema Technologies
- Mycom International Inc.
- NetScout Systems Inc. (Nasdaq: NTCT - message board)
- Nexus Telecom AG
- Pivotal Ltd.
- QoSmetrics Inc.
- Rocket Software Inc.
- Spirent Communications plc (NYSE: SPM - message board; London: SPT)
- SYS Technologies
- Tektronix Inc. (NYSE: TEK - message board) (Minacom)
- Telcordia Technologies Inc.
- TTI Telecom International Ltd. (Nasdaq: TTIL - message board)
- Vallent Corp. (being acquired by IBM)
- Zvolve Systems Inc.
- ZZnode Corp.

Next Page: **Service Assurance – Service Management**

Service Assurance – Service Management

Using fault and performance information, these systems deliver a view of service performance based on the customer's view, rather than the network manager's view. This type of OSS requires new metrics to define levels of acceptable performance, and often entirely new monitoring statistics. These systems are used in conjunction with service-level agreements and provide the information to determine whether the SLA metrics have been met by the service provider.

- Agilent Technologies Inc. (NYSE: A - message board)
- Aran Technologies
- Bridgewater Systems Corp.
- Brix Networks Inc.
- Cisco Systems Inc. (Nasdaq: CSCO - message board)
- CommProve

- Computer Associates
- EMC Smarts
- Ericsson AB (Nasdaq: ERIC - message board)
- FTS (London: FTS - message board) (formerly Formula Telecom Solutions)
- IBM Tivoli
- InfoVista SA (Nasdaq: IVTA - message board)
- IntraISP
- Keynote Systems Inc.
- Mycom International Inc.
- Oracle Corp. (Nasdaq: ORCL - message board) (MetaSolv)
- NTG Clarity Networks Inc.
- Rocket Software Inc.
- Sigma Systems Canada Inc.
- SYS Technologies
- Tektronix Inc. (NYSE: TEK - message board)
- Telcordia Technologies Inc.
- Trendium Inc.
- TTI Telecom International Ltd. (Nasdaq: TTIL - message board)
- Valencia Systems Inc.
- Vallent Corp. (being acquired by IBM)
- Zvolve Systems Inc.

Next Page: **Service Assurance – Test & Measurement**

Service Assurance – Test & Measurement

These systems are closely associated with other performance management processes but differ in that they often include the significant use of hardware that is capable of launching on-demand, or active, tests that help determine network health. They also differ from the test and measurement systems used in vendor and carrier labs, which test network elements in a non-live environment. These systems are designed to be used under live, commercial network conditions. Most of the leading test and measurement packages offer varying degrees of integration of the test and measurement results with either a fault management or performance management system.

- Agilent Technologies Inc. (NYSE: A - message board)
- Anritsu Corp. (NetTest)
- Anue Systems Inc.
- Ascom
- Bridge Technologies Co AS
- Brix Networks Inc.
- C-COR Corp. (Nasdaq: CCBL - message board)
- Casabyte Inc.
- Centellax Inc.
- Computer Associates
- Consultronics Ltd.
- Digital Lightwave Inc. (Nasdaq: DIGL - message board)
- Ellacoya Networks Inc.
- Empirix Inc.
- EXFO (Nasdaq: EXFO - message board; Toronto: EXF)
- Fluke Networks
- Harris Corp. (NYSE: HRS - message board)
- IneoQuest Technologies Inc.

- InfoVista SA (Nasdaq: IVTA - message board)
- Ixia (Nasdaq: XXIA - message board)
- JDS Uniphase Corp. (Nasdaq: JDSU - message board; Toronto: JDU) (Acterna)
- Mycom International Inc.
- Navtel Communications Inc.
- NetHawk Oyj
- NetIQ Corp. (Nasdaq: NTIQ - message board)
- Nexus Telecom AG
- Niksun Inc.
- Nokia Corp. (NYSE: NOK - message board)
- Opticom GmbH
- Pivotal Ltd.
- Psytechnics Ltd.
- QoSmetrics Inc.
- QoVox Corp.
- Radcom Inc. (Nasdaq: RDCM - message board)
- Solinet GmbH
- Spirent Communications plc (NYSE: SPM - message board; London: SPT)
- Tektronix Inc. (NYSE: TEK - message board)
- Telchemy Inc.
- Teradyne Inc. (NYSE: TER - message board)
- Tollgrade Communications Inc. (Nasdaq: TLGD - message board)
- Vierling Electronics GmbH & Co. KG

Next Page: **Service Fulfillment – Activation**

Service Fulfillment – Activation

Service fulfillment is the combination of all of the processes involved in implementing a service order and provisioning the service to customers. *Activation* means "turning on," or making available, a specified service. This could involve the dispatch of engineers and the installation of equipment, but assuming equipment is installed and available, a modern activation system will interface directly with element management systems or the relevant network elements. This means that, for end-to-end service requirements across a nationwide network, an activation system may need to issue commands to ATM or circuit switches to provision circuits, to Sonet terminals to allocate bandwidth, and to a wide array of access devices, such as DSLAMs, digital loop carriers (DLCs), or cable modems.

- Atreus Systems Inc.
- Axiom Systems Inc.
- CBoss Corp.
- C-COR Corp. (Nasdaq: CCBL - message board)
- Ceon Corp.
- Comptel Corp. (Helsinki: CLT1V - message board)
- Converse Inc.
- CSG Systems International Inc. (Nasdaq: CSGS - message board)
- Digital Fairway Corp.
- Ensim Corp.
- Ericsson AB (Nasdaq: ERIC - message board)
- Evolving Systems Inc. (Nasdaq: EVOL - message board)
- Intec Telecom Systems plc (London: ITL - message board)
- Intelliden Corp.
- IntraISP

- JacobsRimell Ltd.
- Kabira Technologies Inc.
- Leapstone Systems Inc.
- Oracle Corp. (Nasdaq: ORCL - message board) (MetaSolv)
- NetCracker Technology Corp.
- NTG Clarity Networks Inc.
- S2Net
- Rodopi Software Inc.
- SaskTel International
- Sigma Systems Canada Inc.
- SupportSoft Inc.
- Syndesis Ltd.
- SYS Technologies
- Telcordia Technologies Inc.
- TTI Telecom International Ltd. (Nasdaq: TTIL - message board)
- Usha Communications Technology Inc.
- Vitria Technology Inc. (Nasdaq: VITR - message board)
- ZZnode Corp.

Next Page: **Service Fulfillment – Provisioning**

Service Fulfillment – Provisioning

Service fulfillment is the combination of all of the processes involved in implementing a service order and provisioning the service to customers. The provisioning function involves specifying the pieces of equipment and parts of the network that are needed for the service, and the allocation of bandwidth in the transport network. Provisioning is therefore closely tied with the engineering design function and also with resource management systems. Provisioning systems will often have a workflow engine to manage both the automated processes and the manual processes that might be necessary when manual engineering inputs are required.

- Amdocs Ltd. (NYSE: DOX - message board) (Cramer Systems)
- Atreus Systems Inc.
- Avisto S.A.
- Axiom Systems Inc.
- CBoss Corp.
- C-COR Corp. (Nasdaq: CCBL - message board)
- Ceon Corp.
- Clarity International Pty Ltd.
- Comptel Corp. (Helsinki: CLT1V - message board)
- Comverse Inc.
- ConceptWave Software Inc.
- Core Networks Inc.
- CSG Systems International Inc. (Nasdaq: CSGS - message board)
- DCA Services Inc.
- Digital Fairway Corp.
- Ensim Corp.
- Evolving Systems Inc. (Nasdaq: EVOL - message board)
- Intec Telecom Systems plc (London: ITL - message board)
- Intelliden Corp.
- IntraISP
- JacobsRimell Ltd.

- Kabira Technologies Inc.
- Leapstone Systems Inc.
- Oracle Corp. (Nasdaq: ORCL - message board) (MetaSolv)
- Motive Inc. (Nasdaq: MOTV - message board)
- NetCracker Technology Corp.
- NTG Clarity Networks Inc.
- S2Net
- Rodopi Software Inc.
- SaskTel International
- Sigma Systems Canada Inc.
- Strom telecom
- Syndesis Ltd.
- SYS Technologies
- Telecordia Technologies Inc.
- TTI Telecom International Ltd. (Nasdaq: TTIL - message board)
- Vitria Technology Inc. (Nasdaq: VITR - message board)
- VPIsystems Inc.
- ZZnode Corp.

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